

## NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

### WASTE UTILIZATION

(Acre)

CODE 633

#### DEFINITION

Using agricultural wastes such as manure and wastewater or other organic residues.

#### PURPOSE

- Protect water quality
- Protect air quality
- Provide fertility for crop, forage, fiber production and forest products
- Improve or maintain soil structure
- Provide feedstock for livestock
- Provide a source of energy

#### CONDITIONS WHERE PRACTICE APPLIES

This practice applies where agricultural wastes including animal manure and contaminated water from livestock and poultry operations; solids and wastewater from municipal treatment plants; and agricultural processing residues are generated, and/or utilized.

#### CRITERIA

##### **General Criteria Applicable to All Purposes**

All federal, state and local laws, rules and regulations governing waste management, pollution abatement, health and safety shall be strictly adhered to. The owner or operator shall be responsible for securing all required permits or approvals related to waste utilization, and for operating and maintaining any components in accordance with applicable laws and regulations.

Use of agricultural wastes shall be based on at least one analysis of the material during the time it is to be used. In the case of daily spreading, the waste shall be sampled and analyzed at least once each year. As a minimum, the waste analysis should identify nutrient and specific ion concentrations. Where the metal content of municipal wastewater, sludge, septage and other agricultural waste is of a concern, the analysis shall also include determining the concentration of metals in the material.

*Use of residuals such as food processing wastes, sludge and septage and other nonagricultural residuals (i.e. woodash and compost) will follow all requirements set in the Vermont Solid Waste Management Rules, any Solid Waste Management Certification issued by the Vermont Department of Environmental Conservation for a specific project, the Indirect Discharge Rules and the Vermont Guidelines for the Land Application of Dairy Processing Wastes, if applicable.*

When agricultural wastes are land applied, application rates shall be consistent with the requirements of the NRCS conservation practice standard for nutrient management (590).

Where agricultural wastes are to be spread on land not owned or controlled by the producer, the waste management plan, as a minimum, shall document the amount of waste to be transferred, *the nutrient analysis of the material*, and who will be responsible for the environmentally acceptable use of the waste.

Records of the use of wastes shall be kept a minimum of five years as discussed in OPERATION AND MAINTENANCE, below.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service [State Office](#) or visit the [electronic Field Office Technical Guide](#).

### **Additional Criteria to Protect Water Quality**

All agricultural waste shall be utilized in a manner that minimizes the opportunity for contamination of surface and ground water supplies.

Agricultural waste shall not be land-applied on soils that are frequently flooded, as defined by the National Cooperative Soil Survey, during the period when flooding is expected. On row crop fields with overland flows, manure shall be incorporated within 24 hours to the degree possible based on limiting site conditions.

No waste applications will occur within 200 feet of a public well (Zone A of the Source Protection Areas (SPA), Vermont Water Supply Rule); and no manure will be applied within 50 feet of a private well. When the soils directly adjacent to a private well are highly susceptible to leaching (Leaching Index is > than 10), the setback distance will be increased to 100 feet. In addition, it is recommended that the application setback areas adjacent to wells be planted to permanent vegetation.

Do not apply wastes within intermittent watercourses (intermittent streams, diversions, grassed waterways, drainage ditches or other areas of concentrated flow). A perennial vegetative buffer is required within 25 feet of the top of the bank of the adjoining surface waters, including intermittent waterways that are determined to potentially transport significant waste or nutrients. Where concentrated flow exits into a perennial waterbody, a 50-foot vegetative buffer will be maintained at the outlet of the area of concentrated flow. These vegetative buffers may be harvested and commercial fertilizer can only be applied during the growing season according to soil test and corresponding fertilizer recommendations. No manure or other wastes will be applied in the buffer area.

The location of sensitive areas and the required setbacks or buffers to protect them shall be discussed with the producer during the development of the plan and documented in the plan.

When liquid wastes are applied, the application rate shall not exceed the infiltration rate of the soil, and the amount of waste

applied shall not exceed the moisture holding capacity of the soil profile at the time of application. Consult the Soil Survey for infiltration and permeability rates and water holding capacity for the soil(s) receiving the application.

Manure or other wastes shall not be applied to frozen, snow-covered or saturated soil, or over bedrock outcrops. The Vermont Accepted Agricultural Practices (AAP's) impose a manure spreading ban between December 15 and April 1. Some wastes may be spread during the ban dates if permitted by the Vermont Department of Agriculture. The basis for the decision to apply waste under these conditions shall be documented in the waste management plan.

Sludge and septage shall not be applied within the setbacks required by the Vermont Solid Waste Management Rules. Food Processing Wastes will be applied according to the "Vermont Guidelines for the Land Application of Dairy Processing Wastes."

### **Additional Criteria to Protect Air Quality**

Incorporate surface applications of solid or liquid forms of manure or other organic by-products into the soil within 24 hours of application to minimize emissions and to reduce odors. Immediate incorporation of manure or other organic by-products into the soil is recommended. When applying liquid forms of manure with irrigation equipment select application conditions where there is high humidity, little/no wind blowing, a forthcoming rainfall event and/or other conditions that will minimize volatilization losses into the atmosphere. The basis for applying manure under these conditions shall be documented in the nutrient management plan.

Handle and apply poultry litter or other dry types of animal manure or other organic by-products when weather conditions are calm and there is less potential for blowing and emission of particulates in the atmosphere. The basis for applying manure under these conditions shall be documented in the nutrient management plan.

When sub-surface applied using an injection system, waste shall be placed at a depth and

applied at a rate that minimizes leaks onto the soil surface, while minimizing disturbance to the soil surface and plant community.

All materials shall be handled in a manner to minimize the generation of particulate matter, odors and greenhouse gases.

**Additional Criteria for Providing Fertility for Crop, Forage and Fiber Production and Forest Products**

Where agricultural wastes are utilized to provide fertility for crop, forage, fiber production and forest products, the practice standard Nutrient Management (590) shall be followed.

Where municipal wastewater and solids are applied to agricultural lands as a nutrient source, the single application or lifetime limits of heavy metals shall not be exceeded. [Use of these materials will follow all federal, state and local requirements and practice standard 590 - Nutrient Management.](#) The concentration of salts shall not exceed the level that will impair seed germination or plant growth.

**Additional Criteria for Improving or Maintaining Soil Structure**

Wastes shall be applied at rates not to exceed the crop nutrient requirements or salt concentrations as stated above.

Residue management practices shall be used for maintenance of soil structure.

**Additional Criteria for Providing Feedstock for Livestock**

Agricultural wastes to be used for feedstock shall be handled in a manner to minimize contamination and preserve its feed value. Chicken litter stored for this purpose shall be covered. A qualified animal nutritionist shall develop rations that utilize wastes.

**Additional Criteria for Providing a Source of Energy**

Use of agricultural waste for energy production shall be an integral part of the overall waste management system.

All energy producing components of the system shall be included in the waste management plan and provisions for utilization of residues of energy production identified.

Where the residues of energy production are to be land-applied for crop nutrient use or soil conditioning, the criteria listed above shall apply.

**CONSIDERATIONS**

The effect of Waste Utilization on the water budget should be considered, particularly where a shallow ground water table is present or in areas prone to runoff. Limit waste application to the volume of liquid that can be stored in the root zone.

[Land application of agricultural wastes, when managed improperly, has a great potential to generate complaints from the community. Minimize the impact of odors of land-applied wastes by:](#)

1. [Applying wastes at times when temperatures are cool. Spread manure in the morning when the air rises instead of trapping it close to the earth.](#)
2. [Avoid applying wastes on weekends and holidays when neighbors are likely to be outside.](#)
3. [Incorporate or inject manure immediately after spreading on row cropland and consider banding on grassland.](#)
4. [Avoid spreading when the wind is directed toward a populated area.](#)
5. [Adjust manure spreaders and sprayers to apply at low pressure with little agitation.](#)
6. [Clean all road spills immediately.](#)
7. [Address complaints swiftly and with a cooperative attitude.](#)

Agricultural wastes contain pathogens and other disease-causing organisms. Wastes should be utilized in a manner that minimizes their disease potential.

Priority areas for land application of wastes should be on gentle slopes located as far as possible from waterways. When wastes are applied on more sloping land or land adjacent to waterways, other conservation practices should be installed to reduce the potential for offsite transport of waste.

It is preferable to apply wastes on pastures and hayland soon after cutting or grazing before re-growth has occurred.

Minimize environmental impact of land-applied waste by limiting the quantity of waste applied to the rates determined using the practice standard Nutrient Management (590) for all waste utilization.

Consider the net effect of waste utilization on greenhouse gas emissions and carbon sequestration.

## PLANS AND SPECIFICATIONS

Plans and specifications for Waste Utilization shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The waste management plan is to account for the utilization or other disposal of all animal wastes produced, and all waste application areas shall be clearly indicated on a plan map.

## OPERATION AND MAINTENANCE

Records shall be kept for a period of five years or longer, and include when appropriate:

- Quantity of manure and other agricultural waste produced and their nutrient content.
- Soil test results.
- Dates and amounts of waste application where land applied, and the dates and amounts of waste removed from the system due to feeding, energy production or export from the operation.
- Describe climatic conditions during waste application such as: time of day,

temperature, humidity, wind speed, wind direction and other factors as necessary.

- Waste application methods.
- Crops grown and yields (both yield goals and measured yield).
- Other tests, such as determining the nutrient content of the harvested product.
- Calibration of application equipment.

The operation and maintenance plan shall include the dates of periodic inspections and maintenance of equipment and facilities used in waste utilization. The plan should include what is to be inspected or maintained, and a general time frame for making necessary repairs.

## REFERENCES

Vermont NRCS Nutrient Management (590) practice standard  
<http://efotg.nrcs.usda.gov/references/public/VT/VT590-051705.pdf>

VT DEC Indirect Discharge Rules (2003)  
<http://www.anr.state.vt.us/dec/ww/Rules/IDR/Adopted-IDR-4-30-03.pdf>

Vermont Guidelines for the Land Application of Dairy Processing Wastes (August 1990)  
<http://www.anr.state.vt.us/dec/ww/indirect/GuidelinesLandApplicationDairyWastes.pdf>

Vermont DEC, Waste Management Division Solid Waste Management Rules  
<http://www.anr.state.vt.us/dec/wastediv/solid/pubs/RULESOCT1504.pdf>